

# California - Nevada River Forecast Center

Rob Hartman  
Hydrologist in Charge

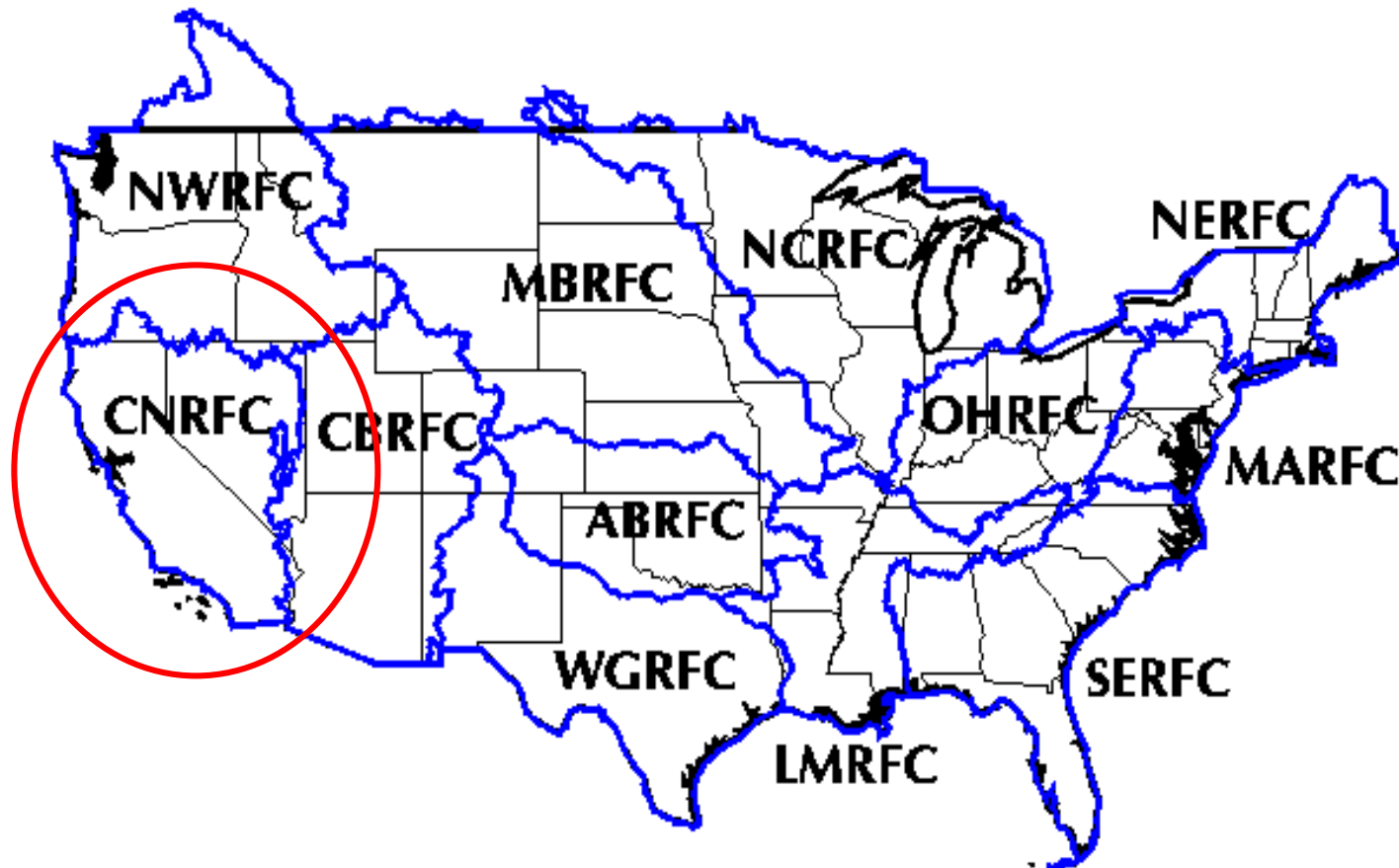


# Mission of NWS Hydrologic Services Program

- Provide river and flood forecasts and warnings for the protection of lives and property.
- Provide basic hydrologic forecast information for the nation's environmental and economic well being.



# NWS River Forecast Centers



# CNRFC Customers

- NWS Field Offices
- Federal Water Management Agencies
- State Water Management Agencies
- City / County Flood Control Operations
- Public / Private Utilities



# CNRFC Staff – 14 FTEs

- Hydrologist in Charge
- Development and Operations Hydrologist
- Administrative Assistant
- 4 Senior Hydrologic Forecasters
- 4 Hydrologic Forecasters
- Senior HAS Forecaster
- 2 HAS Forecasters



# CNRFC Products / Services

**Short Range ... .. Long Range**

**Local Flood Warning Systems Support**

**Flash Flood Guidance**

**Flood Forecast Guidance**

**Reservoir Inflow Forecasts**

**Spring Snow Melt Forecasts**

**Water Supply Volume**



# Hydrologic Modeling

**Short Range** ... .. **Long Range**

**LFWS**  
short time step  
**SACSMA**

**NWSRFS - OFS**  
6 hour time step  
modular, deterministic

**ESP**.....  
NWSRFS configuration  
probablistic

**Statistical**  
simple, efficient,  
inflexible



# Hydrologic Event Status Definition

## Normal

All rivers are below warning stage.

## Minor Event

All rivers are below warning stage, but some are approaching.

## Moderate Event

Some rivers are above warning stage, but below flood stage.

## Significant Event

Many rivers are above warning stage, with some above flood stage.

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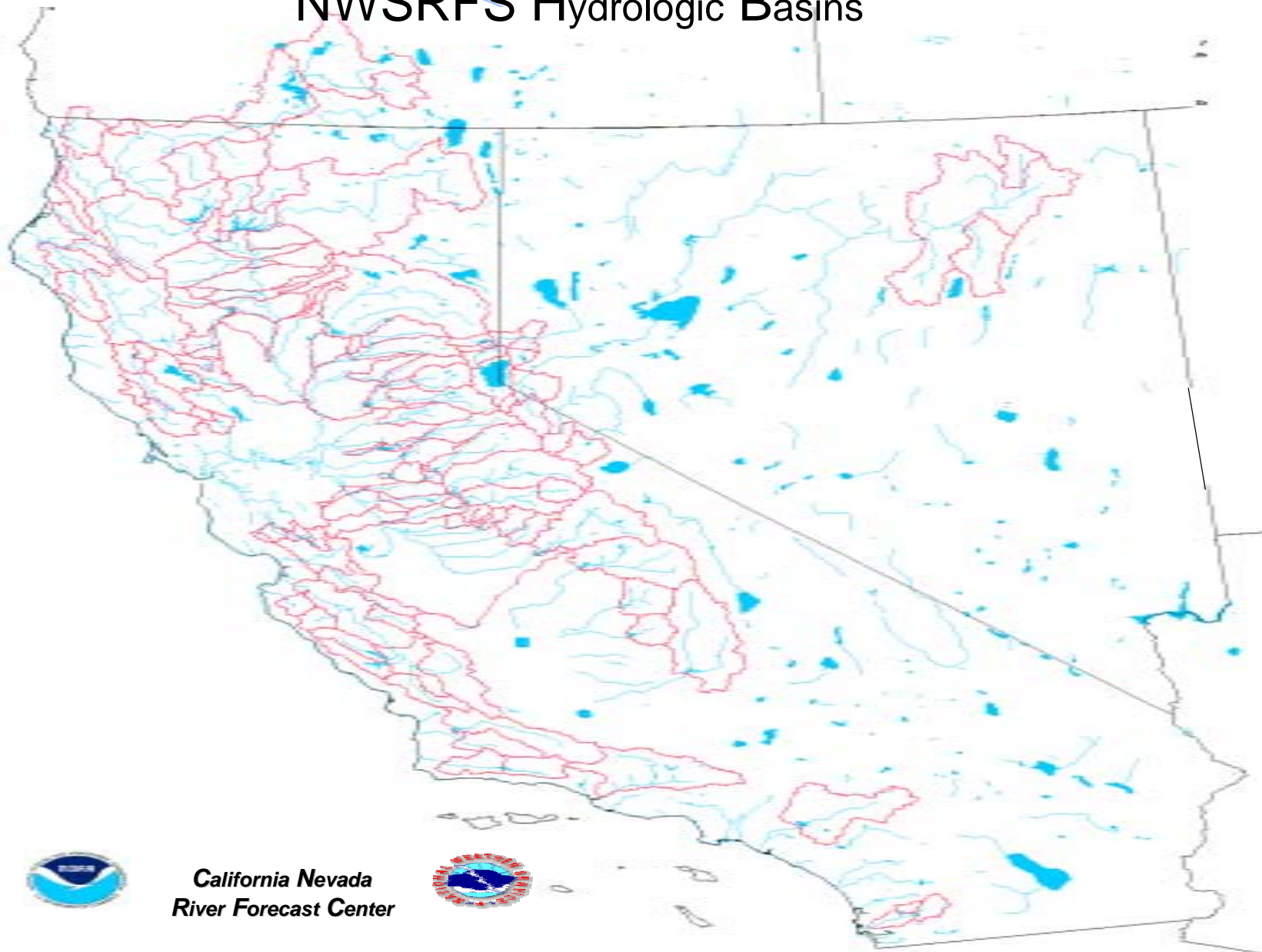
# Event-Based Staffing

Shift	Significant	Moderate	Minor	Normal
H	0500-1400	0500-1300	0600-1430	0600-1430
B	1500-2400	1400-2200		
G	0000-0800	0600-1400		
O	0500-1400	0600-1400	0600-1430	0600-1430
R1	0600-1500	0600-1400	0600-1430	
R2	0600-1500			
M	1500-2400	1400-2200	0930-1800	0930-1800
B1	1500-2400	1400-2200		
B2	1000-1900			
G1	0000-0800			
G2	0000-0800			

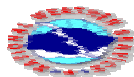
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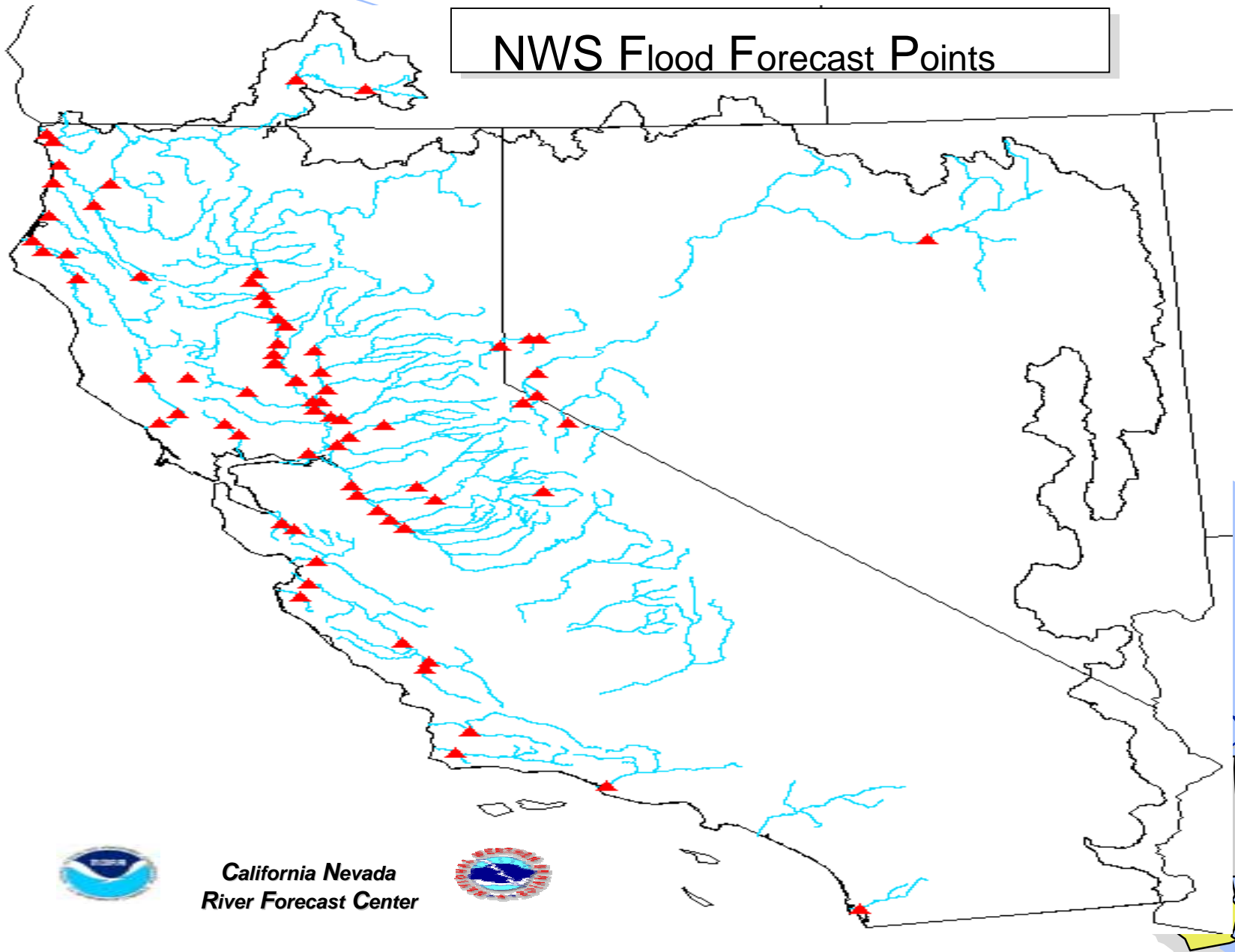
# NWSRFS Hydrologic Basins



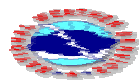
**California Nevada  
River Forecast Center**



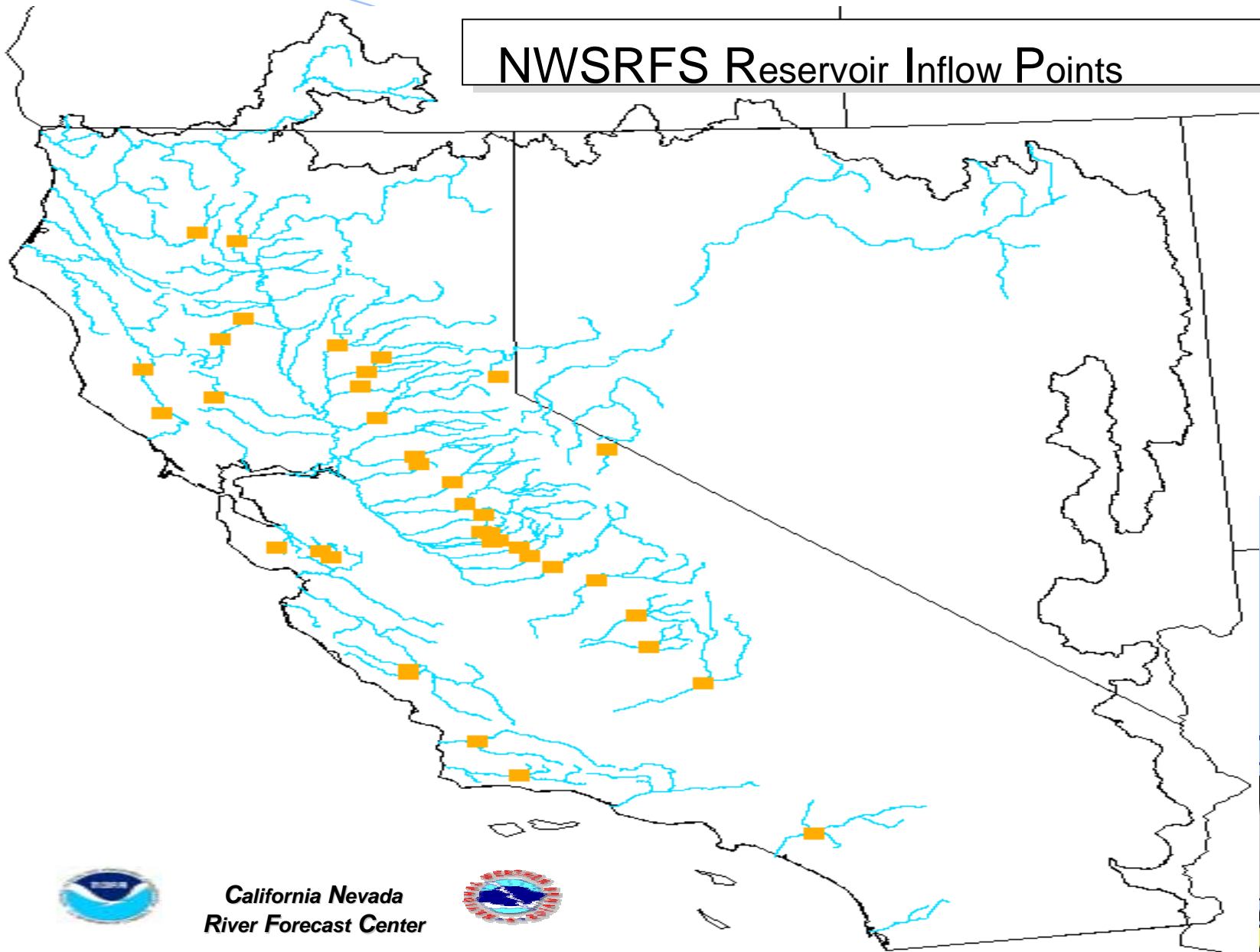
## NWS Flood Forecast Points



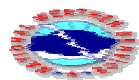
**California Nevada  
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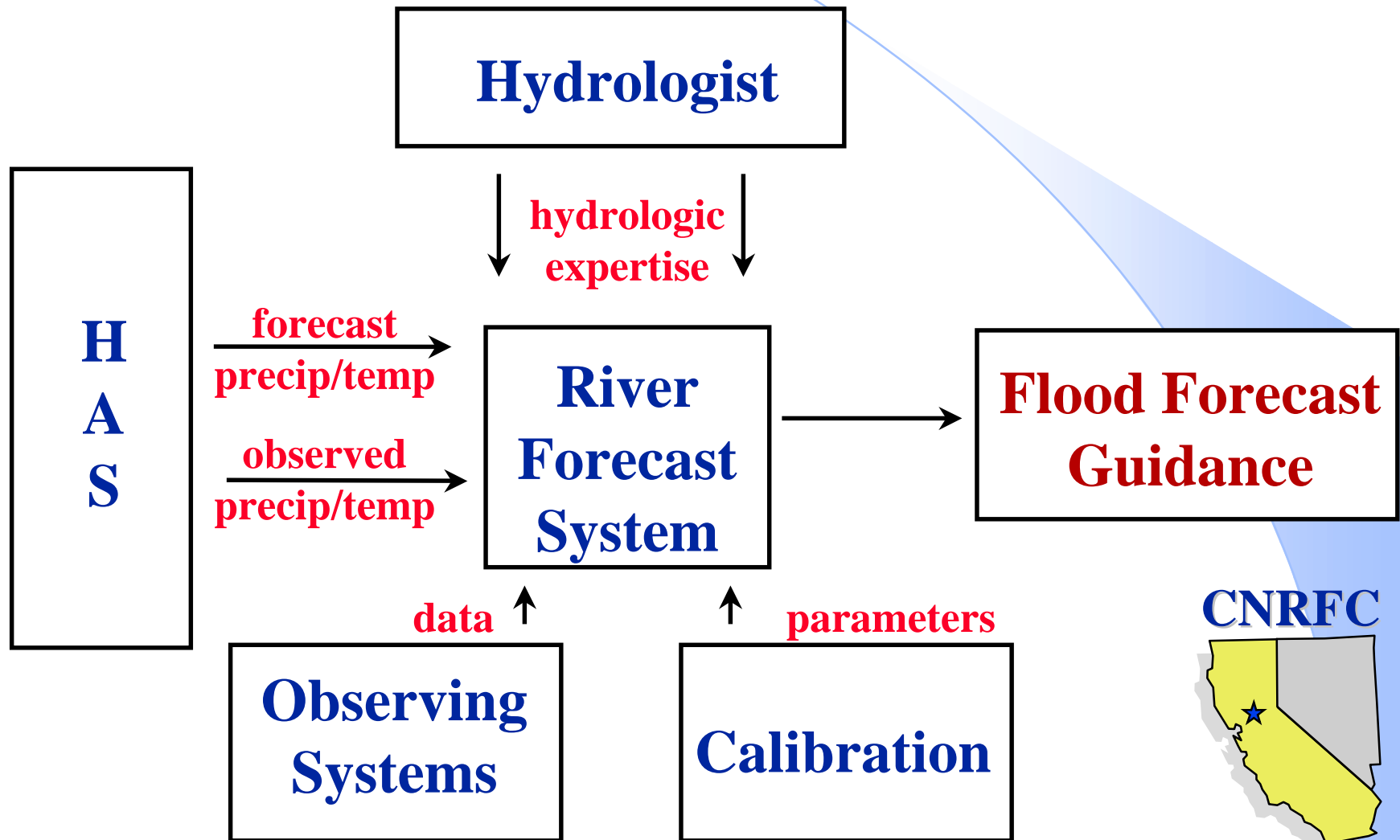
## NWSRFS Reservoir Inflow Points



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# Operational Flood Forecasting



# Typical NWSRFS Configuration

**Air Temperature** → **Rain-Snow Operation**  
observed/forecast

**Precipitation** → **Snow Model**  
observed/forecast

**Soil Moisture Accounting Model**

**Unit Hydrograph Operation**

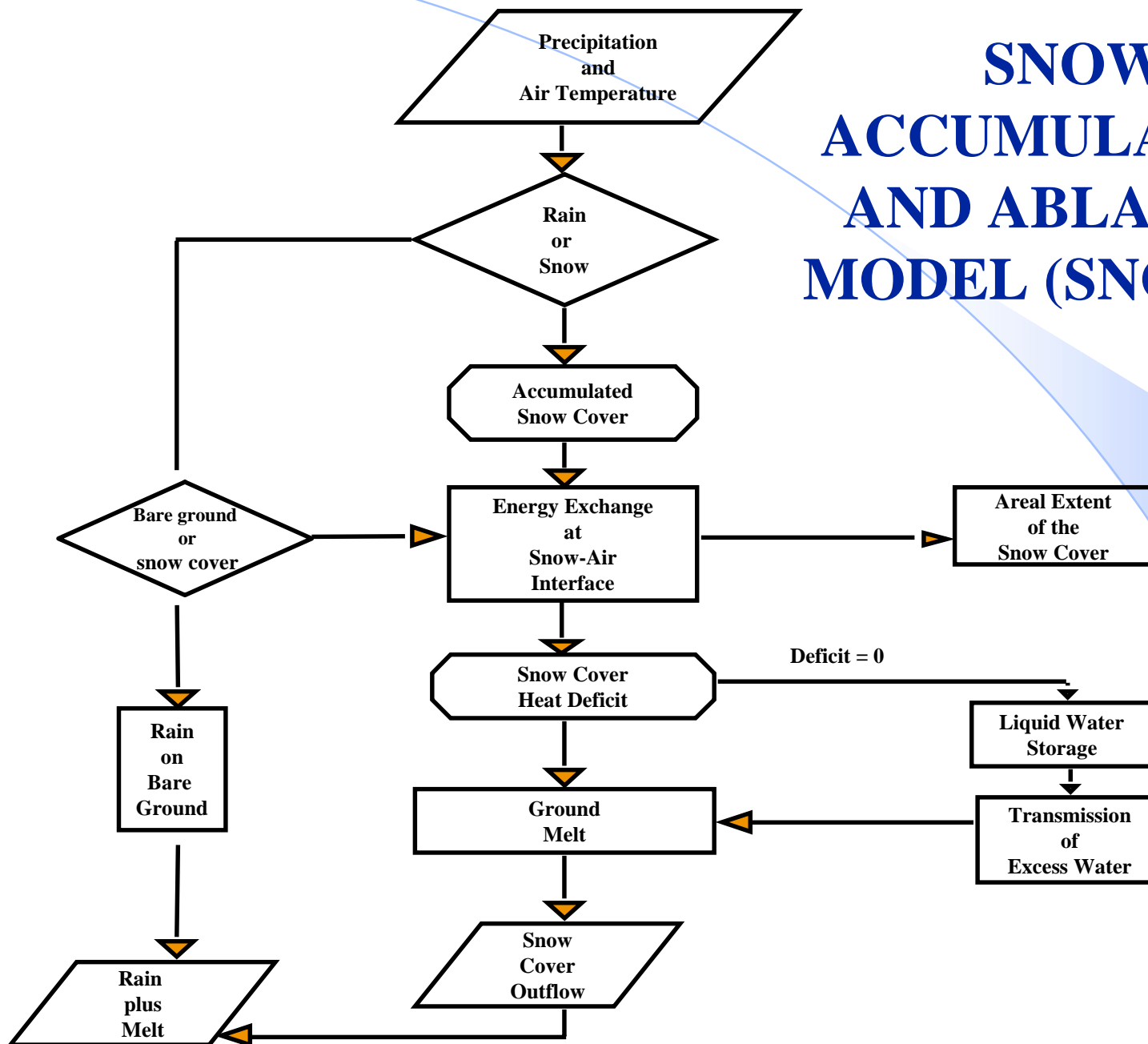
**Streamflow** → **Adjustment Technique**  
observed

**Routing Operation**

**Hydrologist** → **Forecast Guidance**

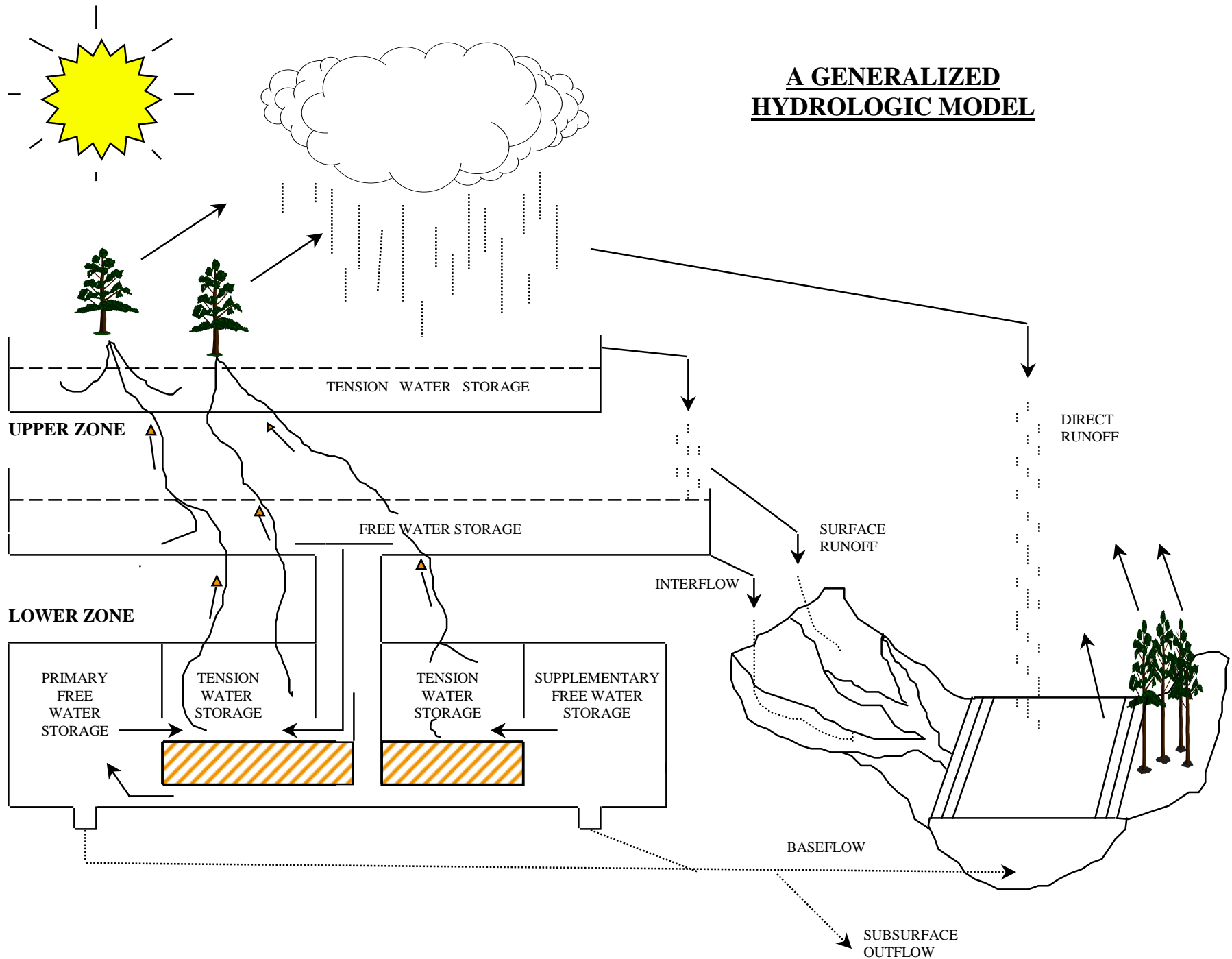


# SNOW ACCUMULATION AND ABLATION MODEL (SNOW-17)

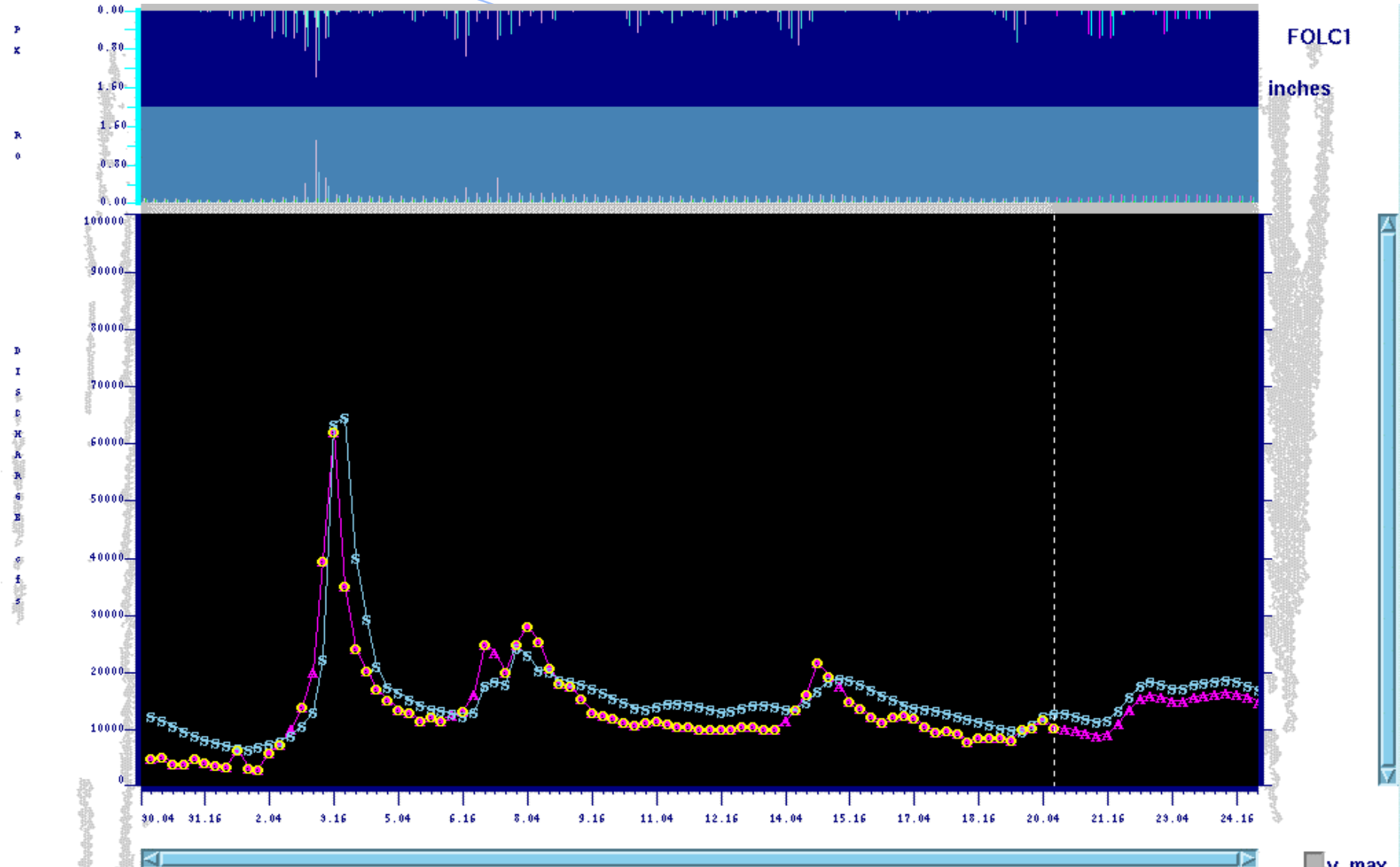


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1/1998 PST

1  
Horizontal Scale

FOLC1.QIN (O)

FOLC1.QINE (A)

FOLC1.SQIN (S)

1  
Vertical Scale

y\_max  
1

# Lower Sacramento Forecast

## SFORVFLSC - Lower Sacramento

	Non-Leveed		Leveed			
	WS	FS	WS	FS	DS	TOP
Sacramento River						
Fremont Weir			33.5'	40.8'	41.8'	45.4'
Verona			-----	41.3'	42.3'	46.0'
Sacramento Weir			26.0'	31.5'	32.5'	38.5'
I St. Br.			25.0'	31.0'	32.0'	34.0'
Feather River						
Gridley			95.0'	103.8'	104.8'	107.2'
Yuba City			65.0'	80.2'	81.2'	83.5'
Nicolaus, nr			40.0'	48.0'	49.0'	54.5'
Clear Lake						
Lakeport	7.6'	9.0'				
Cache Creek						
Rumsy Br.	12.0'	14.0'				
American River						
H St. Br.			40.0'	42.8'	43.8'	47.5'
Yolo Bypass						
Lisbon *			19.0'	26.2'	27.2'	32.1'
* 12.0' action stage						

WS    Warning Stage  
 FS    Flood Stage  
 DS    Danger Stage (Leveed)  
 TOP   Top of Levee

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ISSUED: FRI MAY 21 1999 830 AM PDT

NEXT: MON MAY 24 1999 1000 AM PDT

EAST SIDE SIERRA BASINS RIVER FORECAST

CALIFORNIA NEVADA RIVER FORECAST CENTER, NATIONAL WEATHER SERVICE  
AND THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, SACRAMENTO, CA

ATTENTION...THE FOLLOWING STAGES OF PARTICULAR SIGNIFICANCE  
HAVE OCCURRED OR ARE EXPECTED TO OCCUR

WARNING STAGE

W F CARSON RIVER AT WOODFORDS  
E F CARSON RIVER AT GARDNERVILLE

TEMPERATURES ARE FORECAST TO INCREASE IN THE EAST SIDE OF THE  
SIERRA THIS WEEKEND, WHICH WILL CAUSE AN INCREASE IN RUNOFF FROM  
MELTING SNOW. MOST AREA RIVERS AND STREAMS ARE EXPECTED TO  
EXPERIENCE HIGHER RIVER LEVELS. THE EAST AND WEST FORKS OF THE  
CARSON RIVER, AS WELL AS THE WEST FORK OF THE WALKER RIVER, ARE  
EXPECTED TO REACH WARNING STAGE OVER THE UPCOMING WEEKEND.

ALL STAGES ARE FORECAST TO REMAIN BELOW FLOOD STAGE.

FORECASTS ARE BASED ON PRESENT AND FORECASTED METEOROLOGICAL  
AND HYDROLOGIC CONDITIONS AT TIME OF ISSUANCE.

W F CARSON RIVER AT

WOODFORDS 6 AM STAGE 12.5 FT  
FORECAST TO FLUCTUATE NEAR 12.5 FT THRU SATURDAY MORNING  
THEN FORECAST TO RISE TO NEAR 13.0 FT LATE SATURDAY EVENING  
THEN FORECAST TO FLUCTUATE NEAR 13.0 FT THRU NOON MONDAY  
WARNING STAGE 13.0 FT, FLOOD STAGE 14.0 FT

E F CARSON RIVER AT

GARDNERVILLE 8 AM STAGE 3.6 FT  
FORECAST TO FLUCTUATE NEAR 4.0 FT THRU SUNDAY MORNING  
THEN FORECAST TO RISE TO NEAR 4.5 FT LATE SUNDAY EVENING  
THEN FORECAST TO FLUCTUATE NEAR 4.5 FT THRU NOON MONDAY  
WARNING STAGE 4.5 FT, FLOOD STAGE 7.0 FT

CARSON RIVER AT

CARSON CITY 8 AM STAGE 5.1 FT  
FORECAST TO RISE TO NEAR 7.0 FT NEAR NOON MONDAY  
WARNING STAGE 8.0 FT, FLOOD STAGE 10.0 FT

WEST WALKER RIVER AT

COLEVILLE 7 AM STAGE 7.2 FT  
FORECAST TO RISE TO NEAR 7.5 FT EARLY SATURDAY MORNING  
THEN FORECAST TO FLUCTUATE NEAR 7.5 FT THRU SUNDAY MORNING  
THEN FORECAST TO FLUCTUATE NEAR 8.0 FT THRU NOON MONDAY

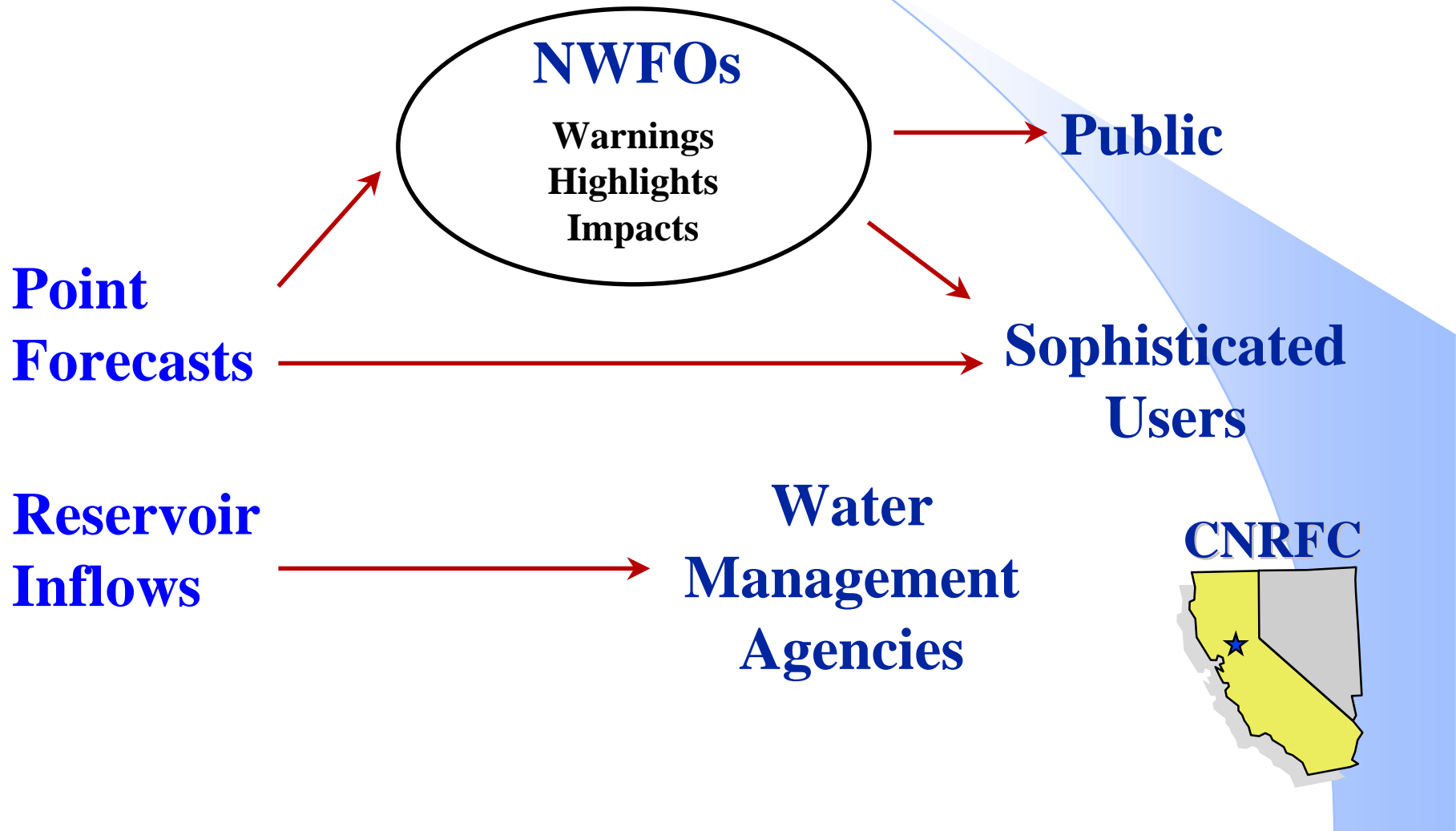
UNLISTED FORECAST POINTS ARE EXPECTED TO REMAIN BELOW WARNING STAGE.  
ALL THOSE AFFECTED BY RIVER CONDITIONS SHOULD REMAIN ALERT FOR  
RAPID CHANGES AND FOR POSSIBLE FORECAST REVISIONS.

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# CNRFC Forecasts



# Forecast Updates

- Lower Sacramento scheduled for updating every 6 to 24 hours depending upon conditions.
  - More severe => more frequent.
  - Noted on each forecast.
- Unscheduled updates as required by changing conditions.

